Illness to Incarceration: Imprisonment as a False Substitute to Inpatient Mental Health Care

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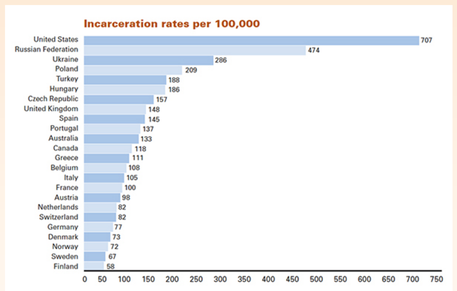
Abstract

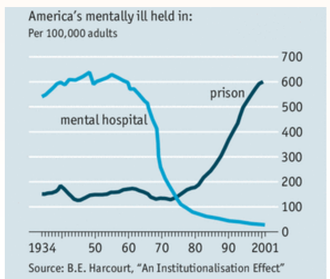
I contribute new evidence regarding the substitution of incarceration for inpatient mental healthcare. I estimate the empirical relationship between state-level mental health care expenditures and incarceration rates using standard panel data methods. Results indicate increased public expenditures on inpatient mental health reduce the number of imprisoned individuals. Providing funding for one additional inpatient hospital bed per 100,000 population reduces incarceration rates by 1.05 per 100,000. However, if we just consider incarceration and inpatient mental health as a way to remove individuals from society, incarceration saves the state $220,000 per-person per year. Results indicate that states have the financial motivation to substitute imprisonment for incarceration, despite their lack of substitutability from a therapeutic standpoint.

Introduction

The population of the United States' prisons and jails increased 500% over the last 40 years, making it the world leader in incarceration. Of the nearly 2.2 million individuals incarcerated, an estimated 300,000 are living with mental illness each year (Sentencing Project, 2018). Housing those with mental illness has proven to be a costly endeavor. As far back as 1996, the Department of Justice has estimated an annual cost of $14 billion to treat incarcerated individuals with a serious mental illness diagnosis (Hurd, 2001). Given an estimate of 300,000 incarcerated individuals with a mental illness, this results in a cost of around $47,000 per inmate annually, compared to the national average of $20,100 per inmate annually (Bureau of Justice Statistics, 1996).



The number of state hospital beds has dropped from 339 per 100,000 population in 1955 to 22 per 100,000 in 2000 as funding priorities shifted away from inpatient care (Manderscheid, Atay, Male et al., 2002). From 1978 to 2000 the total number of inmates per 100,000 increased from 209 to 708 (Bureau of Justice Statistics). These simultaneous trends seem to suggest an interplay between inpatient care and incarceration.



Research Objectives

1. Review the policy background of treatment of mental illness and incarceration in the United States
2. Estimate the variables used by state policymakers to determine a successful model at predicting incarceration
3. Identify the impact of per capita inpatient mental health care spending on incarceration rates at the state level

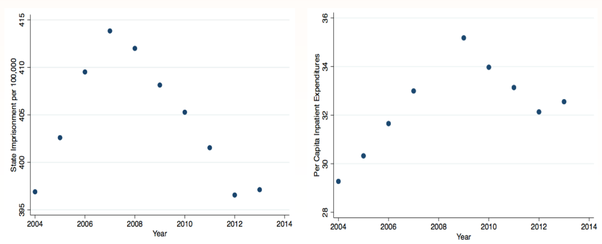
Methods

I examine the empirical relationship between state mental health expenditures and incarceration using several regression models. In the absence of something like a natural experiment, recovering a true causal estimate is not feasible. However, by using several different specifications such as fixed effects, first differences, and lagged dependent variables, we are in essence able to estimate bounds around likely values of the true effect. The preferred specification, an Arellano-Bond approach, yields a result approximately in the middle of our estimated bounds.

Variable Summary Statistics

Variable	Mean	Std. Dev.	Min	Max	Obs.
Variable(s) of Interest					
Total Mental Health Expenditures	120.23	74.96	24.23	409.92	505
Inpatient Mental Health Expenditures	32.35	20.57	9.22	171.61	455
Community Mental Health Expenditures	84.06	62.03	12.9	327.68	455
Environment Variables					
Unemployment	6.36	2.21	2.57	13.66	500
Poverty	13.10	3.38	5.40	23.10	510
Legislature Composition: Democrat	0.45	0.50	0	1	490
Legislature Composition: Republican	0.37	0.48	0	1	490
Governor Democratic Party	0.47	0.50	0	1	500
Demographic Variables					
Black	11.92	11.17	0.60	57.60	459
Hispanic	10.26	9.92	0.60	51.20	459
Age 18 and Older	76.17	2.05	68.50	83.20	459
Age 65 and Older	13.20	1.79	6.60	18.60	459
Median Age	37.34	2.30	28.40	44.00	459
Sex Ratio	90.66	18.93	27.30	110.80	459

Inpatient Expenditures and Imprisonment Trends



Note: The figure on the left shows state imprisonment rate per 100,000 people from 2004 to 2014. The figure on the right shows state per capita inpatient mental health care expenditures across the same window of time.

Results

Using the Arellano-Bond Estimator model as the preferred specification (column 4), we find that inpatient state per capita mental health expenditures do have a significant effect on imprisonment rates. Specifically, for every $10 increase in per capita expenditures, just over four fewer people are incarcerated out of every 100,000 during the subsequent year ($p<0.05$).

Variable	Lagged Dependent Variable	Fixed Effects	First Difference	Arellano-Bond Estimator
Lagged Per Capita Inpatient Expenditures	-0.093 (0.067)	-0.739** (0.328)	-0.389 (0.291)	-0.438** (0.238)
Lagged Imprisonment Lag 1	0.991*** (0.008)	–	–	0.300 (0.184)
Lag 2				0.015 (0.072)
Poverty Rate	0.510 (0.352)	-0.311 (1.068)	-0.241 (0.543)	-0.033 (0.567)
Democratic Party Controlled Legislature	0.523 (2.256)	-9.121* (5.027)	-4.190 (3.532)	-4.474 (4.129)
Republican Party Controlled Legislature	-1.030 (2.391)	-1.148 4.662	-3.017 (3.301)	-1.715 (3.422)
Democratic Party Governor	-1.315 (1.658)	-8.215*** (3.059)	-4.819* (2.818)	-3.027 (2.935)
Black	-0.024 (0.112)	10.673*** (4.427)	-5.786 (4.570)	1.353 (6.441)
Hispanic	-0.142 (0.086)	0.341 (0.221)	0.304*** (0.095)	0.312*** (0.093)
Population aged 18+	-0.842 (0.772)	-4.149 (3.437)	4.897* (2.585)	-12.88* (5.931)
Population aged 65+	1.223 (0.767)	-2.286 (4.810)	-7.708 (5.538)	-2.439 (5.948)
Unemployment	-0.737 (0.636)	-1.213 (1.652)	-0.361 (1.732)	-0.281 (1.802)
Year 2005	–	–	-15.529* (8.271)	–
Year 2006	1.598 (3.026)	7.981 (5.015)	-6.299 (6.479)	-4.355 (3.147)
Year 2007	-1.049 (3.044)	13.399** (5.569)	-0.189 (4.044)	–
Year 2008	-6.747** (3.071)	15.401*** (5.960)	–	0.917 (2.649)
Year 2010	-6.333* (3.846)	12.407 (8.681)	6.789 (4.949)	–
Year 2011	-7.975** (3.630)	6.616 (8.897)	2.362 (3.007)	-1.857 (10.34)
Year 2012	-8.858** (3.524)	-1.007 (10.245)	–	-1.957 (8.164)
Year 2013	-5.302 (3.413)	-1.614 (11.553)	–	-2.203 (4.088)
Constant	59.914 (52.137)	666.454*** (239.814)	0.473 (3.107)	1296.154*** (455.118)
Observations	390	390	291	242
F-statistic	–	4.15	3.36	–
R-squared	0.9902	0.4201	0.1550	–
Chi Statistic	37561.26	–	–	66.77

Note: *$p<0.1$; **$p<0.05$; ***$p<0.01$.

Conclusion

Results suggest that increases in inpatient mental healthcare expenditures reduce incarceration rates. Take the case of Tennessee, with an average yearly cost per inmate of $23,468 (Vera, 2015), a population of 6.591 million, and an average inpatient stay length of 8 days at a cost of $5,700 (Piper Report, 2011). Suppose the government increases per capita state mental health expenditures by $1 annually. This equates to $6.591 million in new inpatient mental health funding. This funding, in people terms, equates to increased capacity in inpatient care for 25.3 people per year. With this funding, 28.9 people will stay out of prison. Therefore, the people effect is greater than 1:1 (1.14:1). However, the state spends $6.591 million to create capacity for 25 people, keeping 29 out of jail to save $680,572. The state fails to see a monetary return on investment in the short run, and therefore can save money by substituting prisons for mental health hospitals, at the expense of other societal outcomes such as employment, violence, and more.

From a policy perspective, this research suggests that increasing expenditures for inpatient mental health treatment facilities has a large effect on incarceration. Given that the costs of incarcerating individuals with serious mental illnesses are high, the slight reduction in imprisonment may result in valuable savings to the state. Thus, state governments seeking to reduce costs may consider higher investment in medical inpatient treatment as a means of addressing mental illness.

Additionally, further analysis indicate that inpatient treatment has a greater reduction effect on incarceration than does community mental health expenditures, suggesting a focus on inpatient expenditures is most suitable in this arena.

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